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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,113	07/11/2001	Katsuhiko Mochizuki	1232-01	7939

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EXAMINER

BOYD, JENNIFER A

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 02/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/889,113

Examiner

Jennifer A Boyd

Applicant(s)

MOCHIZUKI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 1 - 12 and 14 - 23 are objected to because of the following informalities: Please replace the term "characterized" with "wherein". Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite physical properties of multi-filament polytrimethylene terephthalate yarn (i.e. Young's modulus, strength, elastic recovery, residual extension, shrinkage stress, boiling water shrinkage, CV value and CF value). *Ex parte Slob*, 157 USPQ 172, states the following with regard to an article claimed by defining property values:

Claims merely setting forth physical characteristics desired in article, and not setting forth specific compositions which would meet such characteristics, are invalid as vague, indefinite and functional since they cover any conceivable combination of ingredients, either presently existing or which might be discovered in future and which would impart desired characteristics; thus expression "a liquefiable substance having a liquefaction temperature from about 40°C to about 300°C and being compatible with the ingredients in the powdered detergent composition" is too broad and indefinite since it purports to cover everything which will perform the desired functions regardless of its composition, and in effect, recites compounds by what it is desired that they do rather than what they are; expression also is too broad since it appears to read upon the materials that could not possibly be used to accomplish purposes intended.

Furthermore, it is necessary that the product be described with sufficient particularity that it can be identified so that one can determine what will and will not infringe. Thus, claims 1-14

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are indefinite for reciting only the desired physical properties of the multi-filament polytrimethylene terephthalate yarn, rather than setting forth structural and/or chemical limitations of said fabrics.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 – 13, 15 – 19 and 22 - 23 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fujimoto (EP 1033422A1).

As to claim 1, Fujimoto teaches a polyester fiber comprising 90% or more by weight of a poly(trimethylene terephthalate) (Abstract). Fujimoto teaches that the fiber of the present invention is preferably in the form of a multifilament yarn (page 6, lines 9 – 10). Fujimoto teaches that the elastic modulus range, or Young's modulus, acceptable for the fiber is from 17 to 30 g/d (15.02 – 26.50 cN/dtex), which overlaps the Applicant's range of no more than 25 cN/dtex (page 5, lines 54 – 58).

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As to claim 2, Fujimoto teaches that the elastic modulus range, or Young's modulus, acceptable for the fiber is from 17 to 30 g/d (15.02 – 26.50 cN/dtex), which overlaps the Applicant's range of no more than 22 cN/dtex (page 5, lines 54 – 58).

As to claim 7, Fujimoto teaches that the boil-off shrinkage is preferably from 7 – 14%, more preferably from 8 – 12%, which overlaps the Applicant's range of 3 – 15% (page 5, lines 8 – 10).

As to claim 13, Fujimoto teaches that the individual filament size is from 0.1 to 10 denier (0.556 – 11.1 dtex), preferably from 0.5 – 5 denier (0.55 – 5.56 dtex), which overlaps the Applicant's range of no more than 3 dtex (page 6, lines 11 – 12).

As to claims 15 and 16, Fujimoto teaches a method of producing a poly (trimethylene terephthalate) fiber where the yarn is drawn, heat treated and then subjected to a relaxation treatment (page 6, lines 45-50). The intrinsic viscosity of the polymer is 0.4 – 1.5, preferably 0.7 – 1.2 (page 4, lines 24 – 26) as required by claims 15 and 16. In the process, the multifilaments are extruded from a spinning machine (page 7, lines 20 – 24) and wound round a first roll heated at 30 – 80 degrees Celsius having a peripheral speed of 300 to 3,500 m/min without winding thereon (page 7, lines 10-19) as required by claim 15.

As to claim 17, Fujimoto teaches that multifilaments are extruded from a spinning machine at a temperature from 250 – 290 degrees Celsius (page 7, lines 20 – 24), which is 22 – 62°C higher than the melt temperature.

As to claims 18 and 22, Fujimoto teaches that the fibers are drawn on the first roll heated at 30 – 80°C having a peripheral speed of 300 to 3,500 m/min without winding thereon (page 7,

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lines 10-19). The draw temperature is $-15 - 35^{\circ}\text{C}$ higher than the glass transition temperature of poly (trimethylene terephthalate) which is 45°C .

As to claim 23, Fujimoto teaches that the fibers have the relaxation heat treatment performed on the second and third rolls at temperatures $100 - 160^{\circ}\text{C}$ and $120 - 150^{\circ}\text{C}$ respectively (page 8, lines 25 - 55).

As to claim 1, Fujimoto fails to teach the strength being at least 3 cN/dtex, the minimum value of the differential Young's modulus at 3 - 10% extension is no more than 10 cN/dtex and the elastic recovery following 10% elongation is at least 90%. As to claim 3, Fujimoto fails to teach that the differential Young's modulus at 3 - 10% extension is no more than 5 cN/dtex. As to claim 4, Fujimoto fails to teach that the residual extension is at least 45%. As to claim 5, Fujimoto fails to teach that the elastic recovery following 10% elongation is at least 95%. As to claim 6, Fujimoto fails to teach that the degree of crystallinity is at least 30%. As to claim 7, Fujimoto fails to teach that the maximum value of shrinkage is no more than 0.3 cN/dtex at a temperature of at least 120 degrees Celsius. As to claim 8, Fujimoto fails to teach that the maximum value of the shrinkage stress is 0.15 to 0.25 cN/dtex. As to claim 9, Fujimoto fails to teach that the maximum value of shrinkage stress is shown at least 130 degrees Celsius. As to claim 10, Fujimoto fails to teach that the continuous shrinkage in the yarn lengthwise direction is no more than 5%. As to claim 11, Fujimoto fails to teach that the CF value is 1 - 30. As to claim 12, Fujimoto fails to teach that the CF value is 5 - 25. As to claim 15, Fujimoto fails to teach that the relaxation factor is 6 - 20% after the relaxation heat treatment. As to claim 19, Fujimoto fails to teach that the relaxation factor is 8 - 18% after the relaxation heat treatment. Although

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Fujimoto does not explicitly teach the claimed properties as described above, it is reasonable to presume that the said properties are inherent to Fujimoto. Support for said presumption is found in the use of like materials (i.e. a multi-filament yarn comprising polytrimethylene terephthalate subjected to a relaxation heat treatment), which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties mentioned above would obviously have been present once the Fujimoto product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977). In the present invention, one would have been motivated to have a polytrimethylene terephthalate yarn with high strength, low modulus, high elastic recovery, high degree of crystallinity, low shrinkage stress and shrinkage and low coherence factor to provide a stable, strong and functional yarn.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto (EP 1033422A1) in view of Matsuo (JP 11-100747).

As to claim 14, Fujimoto teaches that the fiber can be in the form of a twisted yarn (page 9, line 38). Fujimoto teaches that in one embodiment the polyester fiber described in the reference can be used as the warp or weft of a woven fabric (page 9, lines 40 – 45).

Fujimoto fails to teach that the twist coefficient is between 10,000 – 20,000.

Matsuo teaches a woven material comprising polytrimethylene terephthalate in which the weft has a twisting coefficient of 10,000 – 30,000 (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to create the yarn of Fujimoto with a twisting coefficient as suggested by Matsuo motivated by the expectation to improve the processing performance when weaving the yarn and reduce the number of yarn breakages and fillibration of the yarn.

9. Claims 20 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto (EP 1033422A1) in view of Schippers (US 5,343,601).

Fujimoto fails to teach that the rolls used in the drawing and heat-treatment processes has a rough surface.

Schippers teaches a method of making a synthetic yarn such in which the rolls have a rough or matte surface (column 3, lines 50 – 65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to create the poly(trimethylene terephthalate) yarn according to the process of Fujimoto with the rough surfaced rolls suggested by Schippers motivated by the expectation have better control over the drawing process while bulking the yarn.

As to claims 20 and 21, Fujimoto in view of Schippers discloses the claimed invention except for a surface roughness of 1.5S – 8S as required by claim 20 and a surface roughness of 3.2S – 6.3S as required by claim 21. It should be noted that the surface roughness is a result effective variable; for example, as the surface roughness increases, the fiber becomes more

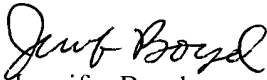
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texturized. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create the rough roll with the suggested surface roughnesses since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the surface roughness to create a bulked fiber without reducing the integrity of the fiber.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 703-305-7082. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Jennifer Boyd
January 30, 2003

